ABSTRACT

This study is a contribution towards analyzing innovative strategies of ecoregion-based conservation. The globally important temperate rain forests existing in the fragmented patches of southern Chile are under threat of human pressure. Bringing together such conservation and livelihood issues, and bridging them has become a great challenge of present day. This study analyses the impacts of an endeavor of indigenous community-"Pichi Mallay Indigenous Park" from various social and economic dimensions. Furthermore, it studies local decision making process, and explores existing bottlenecks and problems that will affect the attainment of long-term conservation and social goals. The research has utilized questionnaire survey, key informant interview, direct observation and secondary data review as the principal methods of data collection. Data obtained are analyzed through content analysis technique and the use of graphs, figures and tables.

The study reveals that the park has improved the social status of indigenous people living in Maicolpue Rio Sur with regard to social prestige, social infrastructures, access to information, exposure and communication. However, it realizes the economic impact on the park beneficiaries to be low, although the economic return to non-indigenous people living in that area is significant. The study identifies major reasons behind this to be the poor investment made by indigenous people upon the potential income generating activities and limited participation in decision making process. A management committee with clear responsibilities is lacking, the presidency of the community is passive, and poor communication between the park beneficiaries and the park administration is prominent, all that having several negative forward and backward linkages. With these findings, the study recommends a community level park management model, basic orientation to be sought at local level and further studies to bridge the information gaps.

Key Words: *Social and Economic Impacts, Decision making, Ecoregion, Mapuche-Huilliche, Indigenous park management, Chile*

IMPACT ANALYSIS AND DECISION MAKING PROCESS IN INDIGENOUS PARK MANAGEMENT UNDER THE VALDIVIAN ECOREGION, CHILE

Samjhana Bista[1]

1 INTRODUCTION

1.1 Background

The purpose of this paper is to present various dimensions of social and economic impacts posed by the community level forest management endeavors in southern Chile. Basically, the context of indigenous people along the coastal region of Osorno is discussed by elaborating the case of Pichi Mallay Indigenous Park managed by the local indigenous people, Mapuche-Huilliche (for convenience, referred as Huilliche in rest of the document). The protection of endemism in Chile's southern forest is as important as the exploration of people's dependency on them and the current management practices. This document has tried to shed light on the level of understanding and the intertwined relationship between conservation and the livelihood of Huilliche people in southern Chile.

Chile's temperate forests covering an area of 13.43 million hectares represent almost one-third of the world's few remaining large tracts of relatively undisturbed temperate forests. This has made southern Chile the highest biodiversity spot of the world's temperate forests, which are of great ecological and conservation value (WRI 2002). Despite this, the temperate forests have experienced a long history of destruction and are presently threatened with conversion to other land uses, particularly plantation of exotic species (Wilson et al. 2005). Having this realized, WWF (World Wide Fund for Nature) International has identified this region as 'Valdivian Ecoregion' and has included under the 'WWF's Global 200'[2] program. It is also recognized by Conservation International as one of the global 25 regions of higher biological importance (Olson and Dinerstein 1997, cited in Bran et al. 2002).

Valdivian Ecoregion is conserved by applying the concept of ecoregional conservation that signifies conserving the larger geographical areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources (EPA 2010). Conservation of such larger ecosystems requires protection and management of smaller ecosystems within them, for instance, smaller forests, wetlands, grasslands, ponds, rivers, agricultural areas and human settlements. State declared or public protected areas have been well represented within the Valdivian Ecoregion, where 68.9% of the total national protected areas exist. Nevertheless,

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[2] The internationally important sites identified by WWF International, in terms of ecological and biological integrity which needs special conservation and management.

this representation of public protected areas has been regarded insufficient due to its poor ecosystem representation, low coverage and inadequate distribution (Pauchard and Villarroel 2002). Therefore, privately owned and community level protected areas have been encouraged in order to fulfill the overall objective of ecoregional conservation. In this context, Huilliche people in some parts of the Valdivian Ecoregion have shown their interest to conserve the native forest areas.

Huilliche people are the main holders of temperate forests in Valdivian Ecoregion, although their land tenure rights are not always clear (Armesto et al. 2001). Securing land tenure is their principle aim behind declaring and managing the private protected areas in their territory, in addition to the contribution towards the national native species conservation strategies. The private protected areas set aside by these communities are referred to as “Indigenous Parks”. In 2001, Huilliche people living in the eight settlements of the coastal region of Osorno in the Region of Los Lagos formed an association called “Mapu Lahual Association of Indigenous Communities”. Under this association in the same year, they established a network of indigenous parks and named it as “Mapu Lahual Network of Indigenous Parks” (RML). Principally, four parks in the network are the reserves of globally important Alerce (*Fitzroya cupressoide)* and two parks provide home to Olivillo Costero (*Aetoxicon punctatum)*, among other endemic species.

1.2 Problem statement

Indigenous households in Chile earn less than half the income of non-indigenous households, and 65% of the indigenous people rank in the lowest two quintiles of the income distribution (World Bank 2002, cited in Agostini et al. 2008). Around one thousand households of Huilliche people living in eight settlements of the coastal region of Osorno are not an exception of such poverty index, who enjoy limited basic services including social infrastructures (WWF 2005). Especially when the Chilean government restricted the collection of live Alerce trees that was their major income source, livelihood of these people depleted (Molina et al. 2006). In this context, strict protection of ecosystems and resulting environmental services by the Huilliche people is challenging. This is especially because the social interest behind the park establishment is to develop tourism and enhance local socio-economic condition (McAlpin 2007).

Many indigenous people see preserved areas as a very useful tool for them, since they can strengthen protection of their territories, reinforce culture-based protection, and consolidate indigenous institutions for land management (Dudley 2008). However, effective participation of people in such endeavor is possible only when their basic needs are fulfilled. Higher participation of people in conservation and natural resource management can be expected if the benefits of managing a resource exceed the cost and the resources have a measurable value to the community (WWF 2006). At the same time, participation can be considered to be an opportunity for the administrators to share their powers with the society while individuals can influence the decision making process (Özden 2003, cited in Atmis

et al. 2007). This implies that the participation, decision making process and benefits are enclosed in a viscous circle and are intertwined.

Private protected areas and the community interventions are recently flourishing concepts in Chile, where the indigenous park in the coastal region of Osorno is a model. However, social and economic data in association with such parks are not available or actual benefits to the direct beneficiaries of the park have not been explored till date. Documentation regarding decision making processes in the management of forest and benefit sharing has also not been made. This can not only affect the effective ecosystem management but also the derivation of associated direct and indirect benefits by the local people.

1.3 Objectives of the study

The overall objective of the study was to analyze social and economic impacts, and decision making process in the management of Pichi Mallay Indigenous Park under the Valdivian Ecoregion, Chile. To achieve this overall objective, the following three specific objectives were formed:

- To explore household level social and economic impacts from the Pichi Mallay Indigenous Park,
- To study decision making process in the management and benefit-sharing from the park,
- To identify bottlenecks and problems in order to recommend appropriate management strategies for the maximization of benefits from the park.

1.4 Research questions

The research has answered three major questions as follows:

(i) Has the Pichi Mallay Indigenous Park contributed to the social and economic upliftment of Huilliche people in Maicolpue Rio Sur?
(ii) Have the decisions regarding the management and benefit sharing from the park been made through intensive local participation?
(iii) What can be done to maximize the benefits from the park?

1.5 Significance of the study

The success of park management system largely depends upon the understanding of people and the acceptance of the conservation concept by them (Uprety 2001). The knowledge, norms and values of local people applied in managing the natural park can have wider environmental and socio-economic benefits (Aus.Gov. 2009). Moreover, the win-win situation from the socio-economic and environmental perspective is desired. This means that both the socio-economy of local people and the environmental situation should be improved. However, the success of such community based natural resource management (CBNRM) interventions is

determined by many factors including clear legal, regulatory and administrative frameworks; and adaptive management and economic returns to the community (USAID 2009). Hence, it is indispensable to enlighten the knowledge of local people and the respective authorities about the actual benefits they can derive over their investment in the natural park management. Economic and social impact analysis is the key to fulfilling the knowledge gap on the existing and potential benefits.

Very few studies (e.g., Escoba et al. 2008, Villarino 2009) have been conducted in the aforementioned area in Chile. Limited information in this regard might cause dilemma in the attainment of overall objective of ecoregion conservation in future. The decentralized approach of involving indigenous communities not only has a concentrated impact in the territory but has a wider spillover effect at the national and international level. Hence, the lack of information on direct and indirect benefits of natural parks might prevent comparative studies of similar and dissimilar cases. The extent of benefits that can be derived from an endeavor highly depends upon the prevailing context and the process of decision making. Appropriately investigated decision making process helps explore the availability of opportunities, access qualification and utilization of returns from livelihood capitals (Haan and Zoomers 2005). Therefore, researches of such kind are highly important.

The outcomes from this study in relation to impact analysis and decision making process can be helpful to develop an effective model for indigenous parks management. This will also provide room for the replication of ideas in other areas with similar environmental setup and conduct comparative studies in future.

1.6 Study assumption, scope and limitation

The general assumption guiding this study was- “The Pichi Mallay Indigenous Park brings a significant positive change in the social and economic status of Huilliche people in Maicolpue Rio Sur”. Therefore, the primary focus of the study was made in the social and economic impact analysis, where the economic return from the major investments made in the park and the associated social and economic impacts in the community have been assessed. Secondly, the decision making process in the park management and benefit sharing has been studied. Associated bottlenecks and problems have also been identified. Due to the financial and time constraints, this study has not included the environmental impacts in detail. Nevertheless, people’s understanding about the environmental benefits from the park has been explored, assuming that this will have an effect in forest conservation and maximization of social as well as economic benefits.

Furthermore, the representative sample to include all of the six indigenous parks under the network of Mapu Lahual was not possible. Therefore, only the case of Pichi Mallay Indigenous Park was considered and an intensive study was conducted in the community of Maicolpue Rio Sur in the Comuna of San Juan de la Costa. All the findings from this community might not be applicable to other

communities that are managing indigenous parks. However, a common community level forest management model has been recommended. It is expected that the model will be replicable to other parks having the context that the Huilliche people in eight communities along the coastal region of Osorno are involved in managing the native forests of similar kind under the Valdivian Ecoregion.

2 LITERATURE REVIEW

2.1 Community based natural resources management (CBNRM)

In 1920s, a management philosopher, Mary Parker Follett proposed a community based idea of management focusing on getting things done by people and emphasizing on “Power-with” rather than “Power-over” people (Babcock 1998). Involvement of stakeholders in planning, management and policy analysis helps to resolve conflicts, increase public commitment and reduce distrust between governmental agencies and stakeholders (Tanz and Howard 1991). Furthermore, development projects usually benefit when the expertise is drawn from diverse sources, including potential users. Realizing this, Garrety et al. (2004) discusses about the concept of ‘‘Community of Practice’’, the members of which develop their own routines, formal/informal rules and stores of shared assumptions and knowledge.

Magigi and Majani (2006) present the successful cases of project implementation through community involvement. They emphasize on the strong social capital, committed local leadership, participatory decision making and the local level consensus building as the key to successful planning and land regularization of informal settlers in Tanzania. Walker et al. (2009), discusses a case of renewable energy development in United Kingdom and accentuates that the trust play important role in the contingencies and dynamics of rural energy projects and in the outcomes achieved. They believe that trust, in turn, can be developed when local people are involved and informed about the project.

The concept of involving people in natural resource management came into existence earlier than Carl Troll in 1939 that highlighted on the holistic approach of conservation. CBNRM is an established policy goal of rural development defined by their tight spatial boundaries of jurisdiction and responsibilities, by their distinct and integrated social structure and common interests, and by their rights to manage their resources in an efficient, equitable and sustainable way (Blaikie 2006). Involvement of locals in the management of forest and water resources is common in most of the developing countries. There has been a general understanding that the poor people are directly dependent upon forest based resources for their sustenance and livelihood. Successful examples of community involvement in forest management have also been presented by International Fund for Agricultural Development (IFAD) from its projects implemented between 2000 and 2004 in developing countries including Nigeria, Peru, Venezuela, Cameroon, India, Bangladesh, and Colombia. Chile also presents some examples of community

participation in natural resources management. Its new management area system is one of them, which delegates management responsibility to the organizations of artisanal shell-fishers in the condition that they team with professionally trained marine biologists (Schumann 2007). Another is the “Regional Model Forest” approach which is implemented in Chile, as a participatory natural resource management process for improving the quality of life of its inhabitants and reducing rural poverty (CUSO 2007). Having known that the indigenous community has a strong control over their land, community forestry concept is also encouraged especially in the rainforest region of southern Chile, although it has been popular until now (WRM 2001).

2.2 Indigenous people in natural resources management

As presented by the United Nations, 370 million indigenous people representing 5,000 different groups live in 90 countries all around the world that are closely intact with their land. Therefore, the intangible heritage that exists intellectually in their culture such as songs, beliefs, superstition, oral history, traditional knowledge systems, medicinal uses of plants, taboos and rituals related to species are of special importance in natural resource management (Makwaeba 2003). This importance of indigenous people and culture in environmental management was first realized by the Bruntland Commission on Environment and Development in 1987. After this, the issues of indigenous people and their rights have been given high priority in the environment-related discussions.

Studies have been carried out in various countries regarding the involvement of indigenous people in natural resource management. Bassols et al. (2006) utilized the three dimensions (symbolic, cognitive and management) of soil and land resource management to analyze indigenous knowledge system in Mexico. They concluded through their study that the use of indigenous knowledge has contributed to the maintenance of high agricultural diversity, soil erosion control and the land management in a multi-purpose manner. Another study was conducted by Rerkasem et al. (2008) on the role of indigenous knowledge and skills in tropical forest management in South-East Asian Region including Cambodia, Myanmar, Vietnam and China. They found that the indigenous techniques help the farmers to improve productivity, provide services in forest regeneration and biodiversity conservation.

2.3 Mapuche community and the natural resources management in Chile

Chile has a significant number of indigenous populations, where eight different groups were officially recognized in 1993. This population represents roughly about 700,000 people or 4.6% of the total population according to the 2002 census. Among them, 95% are from the Mapuche community which represents more than 1% of the Chile’s total population (Agostini et al. 2008). The term ‘Mapuche’ has been generally defined as the people of the land. The Mapuche-Huilliche people,

issues related to whom have been studied by the present research signify the people of the south.

Most of the people from this community live in the coastal region and Andean range of Chile which are the hotspots of natural resources and biodiversity. Herrmann (2006), in her study from the Mapuche community in the Chilean Andes found that the indigenous communities have profound knowledge on the floras of the area that benefit both the environment and human beings. Emphasizing on the ignorance of Chilean government to involve indigenous communities in conservation policies, she recommended the co-evolutionary and interactive policies for the sustainable and culturally appropriate management of native forests. Similarly, another study conducted by Estomba et al. (2006) presented the successful cases of medicinal wild plant conservation and management by the Mapuche community. They concluded that the use of traditional knowledge of Mapuche is very crucial in managing the ecosystems around them.

2.4 Social impact analysis of community based natural resource management

Most of the community development initiatives are often justified by the social reasons, mainly because such activities are inspired by or aimed at serving particular social groups in a locality (Blakely 1989). Hence, the analysis of social components including social units, social problems and social institutions are crucial. Blakely sets five main social objectives of community based development activities: “Generate employment, gain control over the local/neighborhood economy, inspire self-help and cooperative group-oriented assistance, operate for the public benefit, provide an alternative or intermediate sector for economic activity, and promote democratic management and control of enterprises” (p.10). Turner et al. (1993) argue that even the most traditional economic tool-cost-benefit analysis comes from the social perspectives of advantages and disadvantages. According to them, everyone make decisions on the basis of a balance of gains and losses. Consideration of social aspects has, therefore, become increasingly important in development endeavors at present.

Weyerhaeuser et al. (2006) emphasize on the importance of human capital and social capital in all forms of bonding, bridging, and linking as a key towards the success of community actions. They also agree with Birner and Wittmer (2000) that a village level social capital does not simply consist of an ability to get along, but also involves village’s ability to access people and resources at higher levels of government, or “Political Capital”. Similarly, Matta and Alavalapati (2006) draw that for the CBNRM to be successful; it should create higher employment and ensure equity in activities as well as benefits. Higher participation in such actions requires inclusion of disadvantaged groups in the decision making of benefit distribution (Maskey 2006). In the same context, McDermott (2009) adds that the community based forestry will not advance social equity unless it specifically targets marginalized groups. She adds, “Equity is understood to embrace not only

distributional justice but also capacity building and empowerment". Nevertheless, participation of people and socio-economy occur in a circle and both the components affect each other.

2.5 Economic impact analysis of community based natural resource management

Economic analysis is a systematic method for studying problems of choice in which alternative ways to satisfy a goal are studied by evaluating the quantifiable costs and benefits of the available alternatives using economic and statistical techniques (DA PAM 413-5 1992). Gittinger (1972) believes that the analysis of a project is not to replace the national investment decision; rather it is to provide more effective tools by which judgment can be sharpened and the likelihood of error can be narrowed. Economic and financial analysis provides a framework within which all aspects of a proposed project can be evaluated in a coordinated and systematic manner. He further adds,

> *"The rate of return from a project when computed is a useful measure of a project's wealth creating capacity, but it is the whole system of evaluation which justifies the time and effort devoted to a project analysis and from which comes the payoff in terms of better projects". (p.4)*

Economic valuation of natural resources and the impact analysis of the investments made on natural resources management are increasingly being important. Kahn (1995) argues that the low income of people lead to low investment and high environmental degradation. Both the lack of investment and environmental degradation lead to low productivity, low environmental quality, poor performance of labor and a decline in income. Therefore, it is important that the rate of economic return is positive in order to prevent environmental degradation and vice versa. Many studies have been conducted in the past to evaluate the economic returns from the investments made upon resource management.

2.6 Decision making process in participatory natural resource management

Decision making is the study of identifying and choosing alternatives based on the values and preferences of the decision maker. It is also the process of sufficiently reducing uncertainty and doubt about the alternatives to allow a reasonable choice to be made from among them (Harris 2010). Rowe and Boulgarides (1992) believe that the decision makers are critical to ensuring that the results are achieved. Nevertheless, the decisions are based upon basic four force model (figure 2.2) prominent in each organizational setup. The model is applied to all of the formal, informal, profit-making, and voluntary organizations.

Deelstra et al. (2003) argue that the policy-related researches including impact assessment are too loosely connected to decision-making processes. They believe

that the carefully planned researches seem to be of little importance to those with the real power to decide. They agree with the International Association for Impact Assessment (IAIA), which in its meeting in The Hague in June 2002, emphasized that a general shortcoming of impact assessment is its weak linkage to decision-making. Further in 2005, Haan and Zoomers agreed that the decisions are made based upon the availability of opportunities, the acquisition of access qualification and the utilization of returns. Be it an organization or a household, decisions are made mainly with regard to the rate of returns. This can also be a reverse situation where the rate of return is dependent upon the decision making.

The success of most of the community development projects depends upon decision making process. In this aspect, Prager and Nagel (2008) through their study on participatory agri-environmental programs in Germany found that the success of agri-environmental programs depend largely on their acceptance by all major stakeholders, which implies an early integration of varying interests in the decision making process. Decisions towards the sustainable management of natural resources with and stakeholders should reflect a number of factors including goods and services provided by the resource system and multiple interest groups. This entails identifying the criteria and indicators of sustainability that reflect local conditions, assessing their relative importance to management objectives and taking appropriate measures to improve the overall management performance (Balana et al. 2010).

Group decision making is becoming increasingly important in natural resource management because multiple values are treated coincidentally in time and space, and multiple stakeholders are included in the decision process (Schmoldt and Peterson 2000). Wellsted et al. (2002) while defining “Representation” in the context of forest management decision making discusses about the descriptive representation, subjective representation and objective representation. This implies that both the direct and indirect beneficiaries of the forest should be considered as the participants and thus the decision makers.

2.7 Monitoring and evaluation of community based natural resource management interventions

The main sources of social and demographic data are population and housing censuses, administrative records and **household surveys**. Social and demographic statistics are essential for planning and monitoring socio-economic development programs. Household surveys have become a key source of data on social phenomena in the last sixty to seventy years and are among the most flexible methods of data collection. In theory, almost any population-based subject can be investigated through household surveys (United Nations 2005). Most CBNRM programs aim to meet at least two complex goals: conservation of nature and economic empowerment of households (Bandyopadhyay et al. 2004). Hence, the evaluation and analysis of the impacts of such programs require household survey. Similarly, key informants interview helps examine specialized systems or

processes, identify target population for further investigation, and clarify findings of quantitative research or triangulate (OASAS 2010). Since, the key informant interview provide structure and consistency to information-gathering and are especially suited to getting a picture of a particular environment (The Access Project 1999), it is highly relevant to researches related to natural resource management.

WWF (2002) made mention of Peters et al. (1989) who used **direct observation** technique in valuing the rain forest. It explained that the direct observation is useful in researches related to natural resources because in most of the cases, local people have limited knowledge on the desired topic, for instance, the people might not know the name of a plant in international language, but, they know the use of such plants very well. In such cases, the researcher can accompany the locals and observe their daily activities in order to get the desired information. Suwanmanee (2009) utilized direct observation technique, with others, in order to observe the tensions and contradictions among people living around the Thai National Park with regard to the natural resource management policy. The researcher mentioned in the study that the observation helped explore things that would not be observed through other methods of data collection, for instance, survey.

The present study has, therefore, utilized household survey, key informant interview and direct observation as the principle data collection methods.

3 STUDY AREA DESCRIPTION

This study was conducted in the Region of Los Lagos in Southern Chile. Valdivian Ecoregion, which has a major coverage in Los Lagos has been considered as the wider study perspective. This, being the first regional level conservation approach in Chile, various literatures have highlighted on the importance of private/community level conservation efforts. Therefore, the research concept has been narrowed down to the indigenous parks implemented by eight Huilliche communities in the coastal region of the Osorno. For the in-depth study, further zooming has been made towards the investigation of Pichi Mallay Indigenous Park and the associated community in Maicolpue Rio Sur.

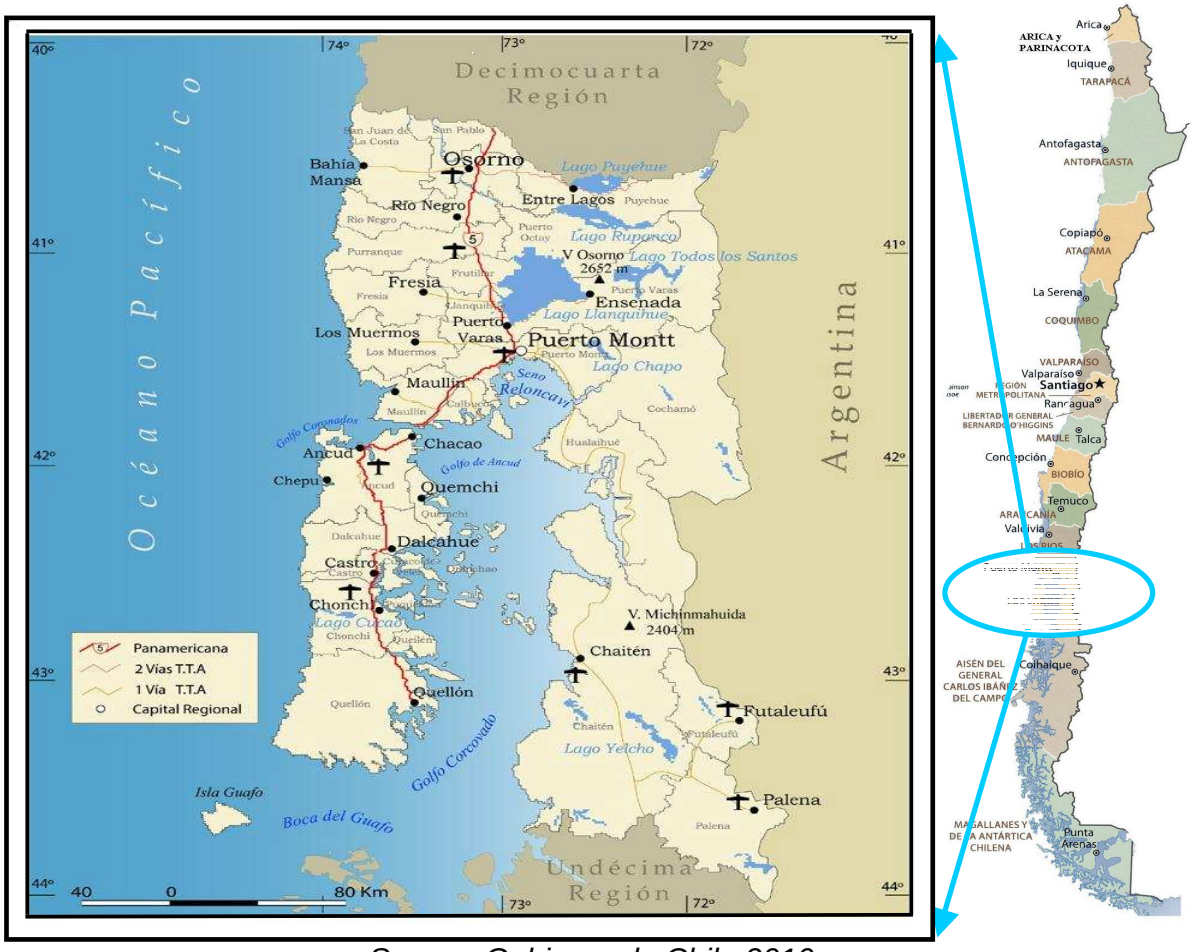
The Valdivian Ecoregion popularly known as “Ecoregion Valdiviana” covering a total area of 34.5 million hectares is the second largest of the seven ecoregions of the global temperate rainforests. It stretches from the coastal mountain range in south-western Chile, across the central valley to the Andean Mountain Range in the east. More specifically, it extends from the political boundaries of Bio Bio to Aysen region (35º-55º S), and is approximately over 1,600 km in length and from 150-250 km in width. It also occupies a narrow belt of the Andes Range in the southern part of Argentina[3]. Similarly, The Region of Los Lagos (figure 3.1) is one of the sixteen administrative regions of Chile extending between 40º 13' S and 44º 3' W latitude,

[3] The information on Valdivian Ecoregion presented in this section has been adopted from UNDP (2005). http://www.gefweb.org/Documents/Work_Programs/documents/Chile_Valdivian ProDoc_1-26-06.pdf (Retrieved on 3rd April, 2010) unless cited.

and 74º 49' S and 71º 34' W longitude from the Pacific Ocean to the Andean Range in South America. It is bordered on the north by the Los Rios Region, on the south by Aisen Region, on the west by the Pacific Ocean and on the east by Argentina. It is 48,583.5 sq. km covering 6.7% of the total surface area of the country. A total of thirty comunas in four provinces namely Osorno, Llanquihue, Chiloe and Palena exist in the region.

The province of Osorno is one of the four provinces in the Region of Los Lagos covering an area of 9,223.7 sq.km. It includes seven comunas namely Osorno, Puerto Octay, Purranque, Puyehue, Rio Negro, San Juan de la Costa and San Pablo. Besides being touristic for several reasons as mentioned earlier, it also possesses one of the most used mountain passes of Chile, the Cardenal Antonio Samore Pass that links the province with Villa La Angostura and San Carlos de Bariloche in Argentina. Osorno is known as the agricultural center producing mainly cereal crops, sugar beet, potatoes and meat (Gobierno de Chile 2010). It has the total population of 221, 509 of which, 26% are rural population (Figure 1).

Figure 1: Map of the study area



Source: Gobierno de Chile 2010

Of major concern in this research are Purranque, Rio Negro and San Juan de la Costa which include the territory of Huilliche people, commonly known as the “Mapu Lahual Territory”. Until 2002, around seven hundred Huilliche people lived in the eight settlements of this region: Maicolpi, Maicolpue Rio Sur, Caleta Condor, Nirehue, Caleta Huellelhue, Manquemapu, Mahuidantu and Melillanca Huanqui. However, at present, around one thousand people are expected to live in the area (INE 2002, McAlpin 2007). The territory covers an area of fourty five thousand hectares including six natural parks namely Parque Pichi Mallay, Parque Maicolpi, Parque y Alerzal Lonco Pedroloy, Parque Gilberto Cumlef, Parque Manquemapu, and Parque Mahuidantu.

4 METHODS OF THE STUDY

This study followed the case study approach to analyze the context of Pichi Mallay Indigenous Park. This approach observes the aspects of individual or group activity in order to “Probe deeply and to analyze intensively the multifarious phenomena with a view to establishing generalizations about the wider population to which the unit belongs” (Cohen and Manion 1994). In this research, generalization of the result in Maicolpue Rio Sur to the eight communities in Mapu Lahual Territory is expected. Bello (2003) believes that the case study provides more concrete information, due to the in depth analysis it offers, of the object, being studied. Another salient characteristic that the case studies possess is they give a voice to the powerless and voiceless (Tellis 2010). This is of higher application to the present research where the view of a rarely heard Huilliche people is considered.

The study comprises both the qualitative and quantitative data. Qualitative part of the research deals with the people’s view and perception regarding the management of the park. Similarly, the quantitative aspect intends to calculate the investments made for the management of the park and economic rate of return at the park level and household level. This research has used some or all of the quantitative variables (nominal, ordinal, interval, ratio) whichever is appropriate in the specific data case.

4.1 Data collection

The principal methods used for the collection of empirical data include questionnaire survey, field observation, key informant interview and secondary data collection.

Questionnaire Survey: A total of thirty six questionnaire surveys using structured questionnaire (annex I) including both the open-ended and close-ended questions were conducted in the community of Maicolpue Rio Sur. Among them, twenty two surveys were conducted with the beneficiaries of the Pichi Mallay Park, all of which were the Huilliche households of Maicolpue Rio Sur. Similarly, another questionnaire survey (annex II) with four households providing accommodation service was conducted, among which only one household was the representative of the targeted community and three were the Huilliche households from the

neighboring community-Maicolpi. Similarly a purposive questionnaire survey (annex III) was conducted with the households running small business service in the area, three of which were the non-indigenous households. Furthermore, structured open-ended questionnaire survey (annex IV) was conducted with the park employees in order to know their view regarding the park management and associated issues.

Key Informant Interview: The key informants of this research include official from WWF Chile, representative of CONAF, representative of CONADI, president of Mapu Lahual Association of Indigenous Parks, President of the community of Maicolpue Rio Sur and ex-coordinator of the Pichi Mallay Indigenous Park. Discussions with some of the key informants were conducted since the proposal preparation phase and continued with several meetings. This semi-structured interview was conducted by using the checklist (annex V) in order to collect preliminary information on the field, receive secondary data and triangulate the results after conducting questionnaire survey in the field.

Direct Observation: Direct observation in the field was made in order to examine the changes in social and economic status of the community, for instance, the cabanas and hostels under construction were noted (annex VIII). The expression of people while answering a particular question was also observed. This helped in repeating or differently delivering the questions in the case of doubtful responses. The park was also visited after the completion of household survey to confirm the information provided by the respondents.

Secondary Data Collection: Data available in the form of published and unpublished documents, journals, books and relevant websites were referred in order to have more insight about the study topic and study area. The sources of secondary data in Chile were mainly WWF, CONAF and Mapu Lahual Association of Indigenous Parks. Results of the studies available from different countries related to the research topic were also used to support the findings of this study or contrast with the cases from other regions and countries. Such secondary data were obtained mainly from the internet sources and the central library of Universidad Austral de Chile.

4.2 Validity and reliability

This research undertook appropriate measures to make the outcomes of the study valid and reliable. The selection of data collection tools and the indicators have been made through sufficient review of previous studies conducted in the similar field and sampling has been done with the reference of available literatures. In order to avoid the situation that the respondents are hesitant to respond to the questions, a research assistant from the research area was hired. Similarly, the questionnaires were designed in such a way that the following questions cross-checked the previous information. Triangulation of both the qualitative and quantitative data were made through the discussions with the key informants and direct observation in the field. The primary data collected were also cross-checked with the available

secondary data in the relevant field and the secondary data were tallied with similar other literatures in order to use the most authentic data.

4.3 Data analysis

The quantitative aspects of the results, mainly the multiple choice questions were analyzed using charts, graphs, diagrams, tables, etc. and the statistical presentations have been made mainly through percentage. For this purpose, Microsoft Excel was used wherever appropriate. Similarly, content analysis was used in order to interpret the results obtained from the structured open-ended questions to the park beneficiaries and park employees; and semi-structured interview with the key informants. This mainly included the views and perceptions of the respondents regarding the subject matter that has been explained in this document using charts in appropriate cases (table 3.5). The unspoken languages of the respondents and the environment in which the interviews were conducted, was also considered during the analysis of open-ended questions. The quantitative and qualitative data acquired from the field and the results obtained were then interpreted using appropriate literatures and experiences from the study site through direct observation. The discussion on the research assumption was also made by analyzing the quantitative data obtained, the nature of the qualitative data, interviews and the direct observation in the field.

5 RESULTS AND DISCUSSIONS

This section presents the empirical data under four headings namely, social impacts from the Pichi Mallay Indigenous Park; economic impacts from the Pichi Mallay Indigenous Park, decision making process; and the bottlenecks and problems in the management of the park. In each sub-heading, information provided is based upon the intensive questionnaire survey with the twenty two indigenous households from Maicolpue Rio Sur and are referred as the park beneficiaries. Information obtained from the questionnaire survey with seven small business holders and four accommodation service providers, referred as the local people except the park beneficiaries, are also provided as the complementary and supportive data.

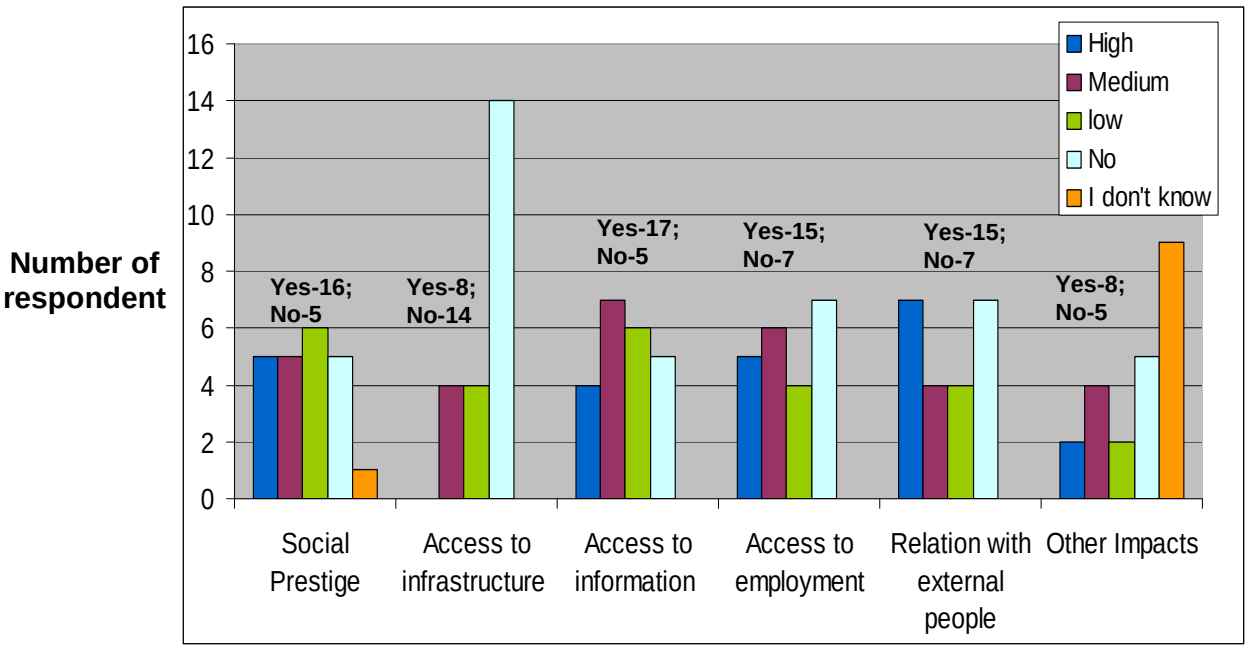
Among the twenty two respondents, the largest number (nine) was represented by the age group between 31 and 40. This was followed by the number of respondents between the age group 51-60 (four) and 71-80 (three). Two of the respondents represented the age group between 20-30, 41-50 and 61-70 each. Most of these respondents had only the basic level of education and had adopted fishing, farming and small businesses as their principal occupation. It was found that the average monthly income of 82% of the park beneficiaries is less than 100,000 CLP per month which is below the minimum wage to the workers in Chile, i.e., 165,000 CLP. It also indicates that these people live under the Chilean poverty line of 29,473 CLP per person in rural area (when calculated for the households with five members).

The same percentage of population also comes under the global poverty line of 1.25 USD (97,948 CLP at the rate of 512 CLP/USD).

5.1 Social impacts from the Pichi Mallay Indigenous Park

The social impacts were studied with regard to five major social indicators: social prestige, access to social infrastructures, access to information, access to employment, and relationship with the external people (Figure 2). The sixth indicator used was open to the respondents, i.e., they were asked to identify other social sectors affected by the park apart from the five main indicators. As presented in the graph, it was found that four out of six i.e., two third of the indicators used to study social impacts from the park indicate that the park has a positive impact at high, medium and low level. Among them, two indicators indicate that the impact is high, one indicate it to be medium and another one indicate it to be low. Taking the highest percentage share among the high, medium and low impact, the social impact can be considered to be medium. Therefore, it can be derived that the park has brought a significant positive change in the social status of the people i.e., the park beneficiaries.

Figure 2 : Social impacts from the Pichi Mallay Indigenous



Source: Field survey 2010

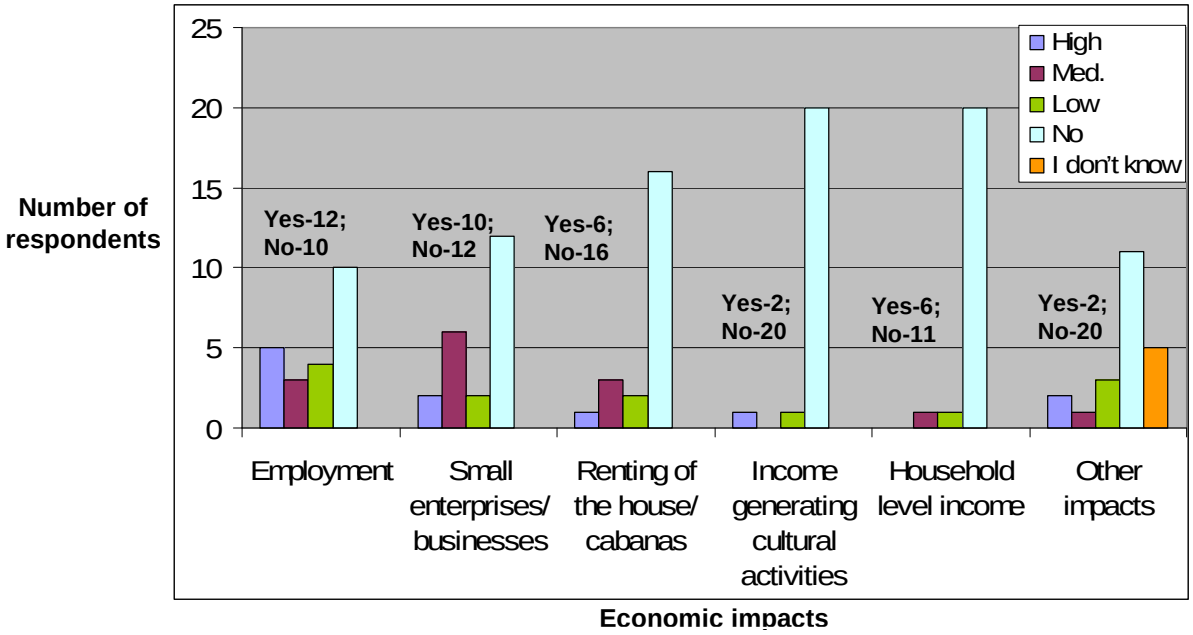
The result of high social impact was also confirmed through direct observation, interviews with the key informants and the review of secondary literatures.

5.2 Economic impacts from the Pichi Mallay Indigenous Park

Similar to the social impacts, economic impacts were studied with the help of six indicators namely, employment, small enterprises/business, renting of the house/cabanas, income generating cultural activities, household level income and other impacts. Contrary to the results obtained on social heading, five out of six, i.e., more than two-third of the indicators show that the park has no economic impact. As presented in figure 3, the number of respondents perceiving no economic impact is very high. This ensures that the park has an insignificant impact in enhancing the economic status of the people i.e., the park beneficiaries.

The increase in average monthly income is noticed only among two out of the twenty two respondents. Among them, one has the income level above 500,000 CLP at present which was less than 500,000 CLP before 2005. This indicates positive change in the income range of the locals. The income level of people earning less than 50,000 CLP has slightly increased, too. However, the average monthly income of more than 90% of the respondents has not changed. Although many respondents reported some changes in their income in individual sectors, it is not visible under this section. This might have happened because of the highly fluctuating income in different months or changes in the income range might have not been observed due to the small changes. On the other hand, the four accommodation service providers earn US $ 14, 367 per year while the monthly income of more than 50% of the permanent business holders has raised. This must be because of the poor investment capacity of the park beneficiaries in income generating activities. Change in the total monthly household income is also the means to cross-check the results obtained regarding the economic impacts under individual indicators.

Figure 3: Economic impacts from the Pichi Mallay Indigenous



Source: Field survey 2010

While studying the economic impact at the park level, Investments made in infrastructural development inside the park and capacity building of the park beneficiaries in various sectors shows that the local community has been successful in establishing cooperative relationship with the potential development organizations including WWF, CONAF and CONAMA. As the result of that, ample achievements have been made with regard to investing in the park between 2005 and 2009. Investments made by the community on volunteer basis are appreciable too, which however, need to be continued. The only opportunity cost to the people over the park establishment that has been identified is the livestock grazing. This, however, is not a critical issue because of the availability of other green areas and forests adjoining the park.

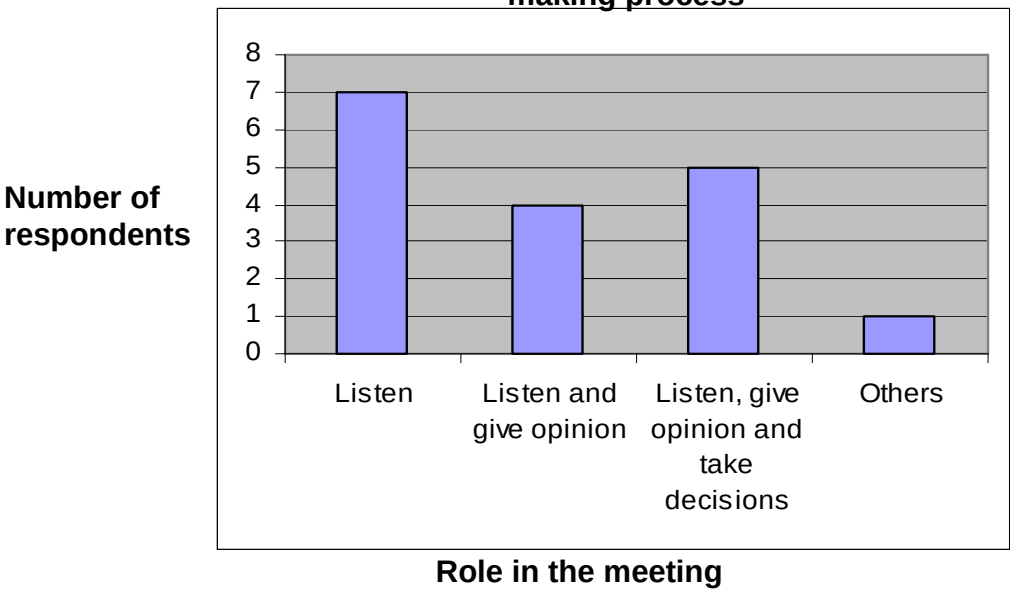
The direct economic benefit derived from the park between 2005 and 2009 seems to be almost six times less (US$ 10,341) than the investments made (US$ 81, 519) within the same period. This should not confuse or concur that the benefit of the park is less than its management cost. Most of the investments will help to derive benefits in the coming years. Similarly, the capacity building trainings will increase the knowledge of people and bring attitudinal change which is crucial for the sustainable conservation. Many indirect benefits have been observed and studied in the area that include the indirect use value, option value, bequest value and the existence value of the park. Economic valuation of such benefits was not under the scope of this study, which if done, will show much more benefit than its management cost. Even though such benefits are not economically evaluated, household survey shows that the people highly value the park due to their cultural affiliation.

5.3 Decision making process in Pichi Mallay Indigenous Park Management

Among the 22 park beneficiaries, 17 reported to have participated in the meetings during the initial years of the park establishment. Among those who participated, 53% were the active participants who had the chance to give their opinions and make decisions (figure 4). This record, nevertheless, has not been continued in the recent years since they don't know about the frequency of meetings. Different people have different views about it while in general; the respondents reported it to be twice in a year. Such meetings are held only for the park employees or the younger generations. The views and opinions of the adults are clearly excluded.

Regarding the fairness in decision making process in terms of benefit sharing and the park management, the respondents have differential views. In the benefit sharing, equal number of respondents reported the process to be fair and unfair. Higher number of respondents were found to be unsatisfied with the decision making process regarding the park management. The results show that the start of the park management was more participatory while in the recent years, it is non-participatory and unfair.

Figure 4: Role of the respondents in decision making process



5.4 Bottlenecks and Problems

Based upon the questionnaire survey with the park beneficiaries, accommodation service providers, small business holders, employees of the park and the key informants, the problems and issues associated with the park at local and regional level were identified. The context analysis during the survey and the data obtained indicated that the local people have limited awareness regarding the park management. Although they were closely associated with nature and were willing to conserve, they had limited information about the importance of scientifically managing the park. Furthermore, poor economic status had discouraged them to provide volunteer support. They were highly dependent upon tourism because it was the only external source of income. No other alternative livelihood options were identified from the area.

Regarding the park administration, lack of the management committee was identified as the biggest bottleneck. In principle, the management committee of the village should also work as the management committee of the park. However, neither the village management committee had taken the charge nor a separate management committee was formed. Only a single individual was found to have been working as the park administrator.

Inside the park, some of the infrastructures including the view points, rest benches and wooden supports along the walking trails were in poor condition. Appropriate rest benches were also missing at the view points. The walking trails inside the park were reported to be incomplete, too. According to the park beneficiaries, the trails should continue towards the beach in Tril-Tril (another beach located 1.5 km away from the Pichi Mallay Indigenous Park). This will provide more opportunities for the

visitors to enjoy the landscape and also provide more employment opportunities to the park beneficiaries who are dispersed along the road towards Tril-Tril.

In addition to the problems existing at the local level, some gaps were also identified at the regional level. The park administration had a weak relationship with the existing public organizations, for instance, the municipality of San Juan de la Costa. Due to which, the programs related to the indigenous parks and the associated communities were not under the priority of the municipality. A weak coordination was noticed between the local, regional and national level public authorities. Although the Chilean government has realized the need of addressing the local problems from regional perspective, no such initiatives were noticed with regards to the indigenous parks in the territory of Mapu Lahual.

6 CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Restrictions made by the Chilean government on the use and trade of live Alerce trees significantly disrupted the livelihood of Huilliche people in the territory of Mapu Lahual. Therefore, they established six natural parks in 2001 with the objective of income generation through tourism development. These parks, popularly known as indigenous parks, are fully managed and conserved by the eight communities. Being an example of private protected areas, these parks help to meet the goal of Valdivian Ecoregion and represent ecosystems that are poorly represented by the public protected area system. Pichi Mallay Indigenous Park is one among these parks which is the reserve of *Aetoxicon punctatum* (Olivillo Costero). It is managed by approximately 107 Huilliche people living in Maicolpue Rio Sur in the comuna of San Juan de la Costa. The park has a significant social impact as it has increased the social prestige, enhanced the situation of social infrastructures, improved the access to information, improved the relationship with external people and strengthened the communication system in Maicolpue Rio Sur. In general, the park has also improved the economic situation of people living in this area mainly through businesses and accommodation services. However, such economic benefits are not visible among the indigenous households or the park beneficiaries, as their involvement in such activities is insignificant.

The frequency of meetings regarding the park management and benefit sharing has decreased in the recent years. This means that the level of local participation in park management has decreased, too. Meetings that are held occasionally in the recent years prioritize only younger members of the community. Such meetings are either regarding the capacity building trainings or work at the park, which do not involve adults. The decision making process has not been fair especially in the recent years. Mainly the decisions regarding the benefit sharing are not fair due to the communication gap between the park beneficiaries and the administration. This has reduced the faith and willingness of local people towards the effective park

management. The higher transparency and consultation is desired by the local people mainly because they are aware about its importance.

A link between the park administration and the park beneficiaries are lacking that has limited the information flow and increased the communication gap. At the same time, the vision of people regarding the conservation of indigenous parks is not clear that has restricted the application of their innovative ideas both in conservation and livelihood upliftment. Furthermore, voluntary participation of people in park maintenance and improvement is declining. Occasional forest fires and the destruction of trails by the domestic animals are some of the indicators of people's negative attitude towards the park. This together with the passivity of the community president, and weak integration of the local problems at the regional and national development priorities are the major reasons behind poor economic return at the household level.

6.2 Recommendations

Based upon the conclusion of the study, the following recommendations are made that can be applied both by the park administration, local communities and the associated development organizations. The recommendations can also be applied to other indigenous parks in the territory of Mapu Lahual since the same management model has been applied in all of the six indigenous parks.

- The major bridge to link local communities with the national and international development organizations should be the Park Management Committee formed under the local indigenous community i.e., Maicolpue Rio Sur Indigenous Community.

- The Maicolpue Rio Sur Indigenous Community should be directly involved in the park as the supervisor and should monitor the progress of the park management committee both in terms of financial record keeping, park maintenance, meetings, and compliance with the developed plans.

- Capacity building of locals and community level awareness raising programs are very important in the area. This helps changing the attitude of local people towards conservation and alternative livelihood options, for example, cultural programs for income generation.

- The minute or the record of each meeting with the description of purpose, decisions and participation should be maintained by the park administration and should be available to the general public whenever required.

- Infrastructure facilities associated with the park should be improved and regularly maintained. In general, this includes access road, the directing signals, wooden supports along the trails and rest benches at the view points.

- Alternative livelihood options like pig fattening and vegetable farming for economic purposes should be practiced by the people. An introduction of micro-credit programs could be a viable option for them to start a new business.

- The marketing of Non-Timber Forest Products (NTFPs) should be explored and practiced by the locals.

- The park should be opened throughout the year and publicity should be made in such a way that people visiting Maicolpi or Maicolpue Rio Sur visit the park.

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